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EDWIN DUNKIN, F.R.S., President, in the Chair.

Henry Park Hollis, B.A., Royal Observatory, Greenwich, S.E.;
Thomas Henry Hovenden, Selhurst Road, South Norwood;
Thomas Lewis, Royal Observatory, Greenwich, S.E.;
Lord McLaren, 46 Moray Place, Edinburgh;
Rev. William James Boden Roome, The Manse, Aldershot;
Harold Seward, B.A., Patent Office, Southampton Buildings, Chancery Lane;
Rev. Henry Wheaton, M.D., 9 Star Hill Terrace, Rochester; and
Rev. J. Wilkins, 16 Barforth Road, Peckham Rye, S.E.,

were balloted for and duly elected Fellows of the Society.

Note upon the Right Ascensions of certain Standard Polar Stars. By Prof. Truman Henry Safford.

I should be glad to call the attention of observers in the Society to the need of more systematic observation of the stars of high northern declination. There are systematic discrepancies of a personal character between the Right Ascensions of stars near the Pole as determined by different observers, a fact which has been long recognised but little investigated, except quite lately; and the researches already made are largely unpublished. It would be desirable, I think, to insert in the principal star catalogues, as they are formed, more stars within a few degrees of the Pole than the number which would precisely correspond to the relative area of that region; or, in other

words, to extend the scheme of observation to fainter magnitude there than elsewhere. Practical reasons connected with geodetic astronomy make this also desirable.

A branch of philosophical study—physiological psychology—has lately been brought into relation with this subject by Professor Wundt, of Leipzig, and other investigators; and astronomers, especially in large observatories and in colleges, have the power, while contributing to their own science, to add valuable materials of observation to a far distant inquiry. The psycho-physical experiments proper will necessarily be less conclusive in certain directions than the astronomical, because the latter are the results of thoroughly trained professional ability, while the former will have more variety but be made with less fixity of habit.

The stars included in the following list are given in the American or the French Ephemerides, but are not in the Berlin *Jahrbuch* or the *Nautical Almanac*. Their use as standard polars is very often a great convenience, but is rendered difficult by the fact that their tabular places are derived from investigations made a good while ago, and are now uncertain or incorrect.

I have made a least-square determination of their proper motions from the best available material, and have, with the help of these proper motions, brought up the observations made since 1860. The tabular places corrected are for Nos. 1, 2, 5, those of the American *Ephemeris*, and for the remainder those of the *Annales du Bureau des Longitudes*, tome premier. The Ephemerides of 7 and 9, together with two stars also given in the Berlin *Jahrbuch*, are published in a small annual pamphlet by the Bureau des Longitudes, and those of the five others in the *Connaissance des Temps*.

No.	Star's Name.	Correction to Tabular Right Ascension. A.	B.	C.		Adopted. Right Ascension. 1885·0.	Decli
		s	s	s	s	h m s	°
1	Groom. 944	−0·12		−0·38	−0·011 (*t*−1885)	5 25 14·76	85
2	Camel. 25 H.	−0·44		−0·58	−0·008 (*t*−1885)	7 6 49·23	82 3
3	Groom. 1119	+6·16	+5·65	+6·1	+0·32 (*t*−1885)	7 41 4·71	88 5
4	Bradley 1672	+2·36	+1·87	+1·6	+0·063 (*t*−1885)	12 14 19·98	88 2
5	Camel. 32 H.	−0·42		−0·30	−0·009 (*t*−1885)	12 48 17·22	84
	Groom. 2283	−2·22	−2·32	−2·2	−0·089 (*t*−1885)	15 14 36·74	87 4
	Bradley 2701	+0·15	−0·30	+0·2	+0·008 (*t*−1885)	20 34 2·92	81
8	Groom. 3548	−0·71	−0·98	−0·76	−0·017 (*t*−1885)	21 22 23·71	86 3
9	Cephei 32 H.	+0·31	−0·25			22 22 18·48	85 3
	Cephei 39 H.	−0·08	−0·40			23 27 50·20	86 1

The corrections in column A are derived from my own observations for 1882–3, published in the *Proceedings of the American Academy* for 1884; those in column B from M. Gon-

nessiat's, at Lyons, in the *Comptes Rendus* for August 13, 1883; and those in column C from the combination of several determinations to which I have alluded. For stars 9 and 10 the correction was very small, and has been omitted. The corrections in one or two cases are quite sensible. The largest, for Groombridge 1119, is about $0^s.1$ when reduced to the parallel, and arises from a large error in Groombridge's Right Ascension. He seems, like all observers of his time, to have adjusted the instrument rather too rarely, so that it was probably $0^s.2$ or $3''$ of arc from its proper position in the region near the Pole when this star was observed; the error in his case is made absolutely certain by non-agreement of his position with a long series of others, especially Struve 1815, as well as by the increasing deviations from the positions of the *Connaissance des Temps*. The case of star No. 6 is similar. A revision of Groombridge's right ascensions in the immediate region of the Pole has long seemed to me a necessity. The instrumental corrections needed are probably quite as marked for his Meridian Circle as for the transit instruments at Greenwich in Maskelyne and Pond's time.

The comparison of M. Gonnessiat's Right Ascensions of close polars with my own, as given in my paper in the *Proceedings of the American Academy*, p. 347 of the last volume, shows that it is a little doubtful how to investigate and apply the peculiar personal equations which have been long recognised in this region. Not a very small part of them may, perhaps, be due to the cessation of the ordinary personal equation, if the eye-and-ear method be employed throughout. The observer is no longer liable to one kind of psychical disturbance, namely, that produced by the *rapidity* of the star's motion; and it may have been that peculiar anxiety which produced the large discrepancy between Bessel and Struve, for instance. There is no startling improbability in referring the whole constant difference between M. Gonnessiat and myself, about $0^s.4$ for the seven stars given here, to our different clock corrections, assuming that our methods of observing polars are identical.

Whatever be the form of personal equation here, there is no doubt that it would be interesting to follow it out; and I venture to request those astronomers who have well-mounted transits to pay some greater attention to the stars of this list, and any other close polars to the 7th or 8th magnitude.

Williamstown, Mass.:
1884, *Nov.* 27.
